



# higher education & training

Department:  
Higher Education and Training  
**REPUBLIC OF SOUTH AFRICA**

**T510(E)(M22)T  
APRIL EXAMINATION**

**NATIONAL CERTIFICATE**

**ENGINEERING DRAWING N1**

**(8090261)**

**22 March 2016 (X-Paper)  
09:00–13:00**

**REQUIREMENTS: ONE A2 Drawing Sheet**

**Calculators and drawing instruments may be used.**

**This question paper consists of 5 pages and 4 diagram sheets.**

**DEPARTMENT OF HIGHER EDUCATION AND TRAINING**  
**REPUBLIC OF SOUTH AFRICA**  
NATIONAL CERTIFICATE  
ENGINEERING DRAWING N1  
TIME: 4 HOURS  
MARKS: 100

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**INSTRUCTIONS AND INFORMATION**

1. Answer ALL the questions.
  2. Read ALL the questions carefully.
  3. Number the answers according to the numbering system used in this question paper.
  4. Marks will be deducted for untidy work.
  5. ALL drawings must be done neatly using drawing instruments.
  6. ALL drawings must conform to the latest SANS Code of Practice.
  7. ALL work you do not want to be marked must be clearly crossed out.
  8. Write neatly and legibly.
-

**QUESTION 1: FREEHAND**

Figure 1, DIAGRAM SHEET 1, shows a view of a planer.

Only use a pencil and eraser and draw the given view of the planer, 1.5 times the given size.

**[10]****QUESTION 2: REPRODUCTION DRAWING AND GEOMETRICAL CONSTRUCTION**

Figure 2, DIAGRAM SHEET 2, shows a view of a pump cover.

- 2.1 Draw to scale 2 : 1 the view of the pump cover (9)
- 2.2 Show all construction lines used in the construction of the ellipse. (2)
- 2.3 Insert any SIX dimensions. (2)
- 2.4 Draw the following title and scale centrally beneath the layout:

PUMP COVER  
SCALE 2 : 1

(2)  
**[15]**

**QUESTION 3: FIRST-ANGLE ORTHOGRAPHIC PROJECTION**

Figure 3, DIAGRAM SHEET 3, shows an isometric view of a casting.

DO NOT draw the given views, but draw to scale 1 : 1, and in first-angle orthographic projection the following views:

- 3.1 A front view in the direction of 'F' (5)
- 3.2 A left view in the direction of 'L' (5)
- 3.3 A top view in the direction 'T' (5)
- 3.4 Add the following title and scale centrally beneath the layout:

CASTING  
SCALE 1 : 1

(2)

- 3.5 Draw the symbol for first-angle orthographic projection beneath the layout.

(1)  
**[18]**

**QUESTION 4: ISOMETRIC DRAWING**

Figure 4, DIAGRAM SHEET 4, shows two views of a bracket drawn in first-angle orthographic projection.

DO NOT draw the given views but draw to scale 1 : 1 an isometric view of the bracket.

Point 'P' must be the lowest point.

No hidden detail required

**[10]**

**QUESTION 5: SECTIONAL DRAWINGS**

Figure 5, DIAGRAM SHEET 5, shows a half sectional front view and a top view of a hanger bearing drawn in first-angle orthographic projection. Draw to scale 1 : 1 and in first-angle orthographic projection the following views of the hanger bearing:

- |     |   |     |
|-----|---|-----|
| 5.1 | A full sectional front view on cutting plane F–F                            | (5) |
| 5.2 | A left view   | (5) |
| 5.3 | A top view  | (4) |
| 5.4 | Add the following title and scale centrally beneath the layout:             |     |
|     | HANGER BEARING<br>SCALE 1 : 1   | (2) |
| 5.5 | Draw the symbol for first-angle orthographic projection beneath the layout. | (1) |
- [17]**

**QUESTION 6: PRISMS AND PYRAMIDS**

Figure 6, DIAGRAM SHEET 6, shows front and auxiliary view of a hexagonal pyramid.

Draw in first-angle orthographic projection and to scale 1 : 1 the following views of the pyramid:

- |     |                                    |     |
|-----|------------------------------------|-----|
| 6.1 | The given front and auxiliary view | (4) |
| 6.2 | A top view in the direction 'T'    | (5) |
| 6.3 | A left view in the direction 'L'   | (5) |
- No hidden detail required

**[14]**

**QUESTION 7: COMPUTER TERMINOLGY AND ABBREVIATIONS**

Draw the answer block as shown in FIGURE 7 below, to full size on the DRAWING SHEET.

Print the answers of the following questions in the table drawn on the drawing sheet.

- |       |   |     |
|-------|---|-----|
| 7.1   | Name ONE input device a draughtsman uses to produce a drawing.  | (1) |
| 7.2   | Name ONE output device a draughtsman uses to produce a drawing. | (1) |
| 7.3   | Name ONE computer hardware used on the CAD system.              | (1) |
| 7.4   | Write down the terminology of the following abbreviations       |     |
| 7.4.1 | CAD   | (1) |
| 7.4.2 | PCD   | (1) |
| 7.4.3 | HEX   | (1) |

|     |       |
|-----|-------|
| 7.1 |       |
| 7.2 |       |
| 7.3 |       |
| 7.4 | 7.4.1 |
|     | 7.4.2 |
|     | 7.4.3 |

**FIGURE 7**

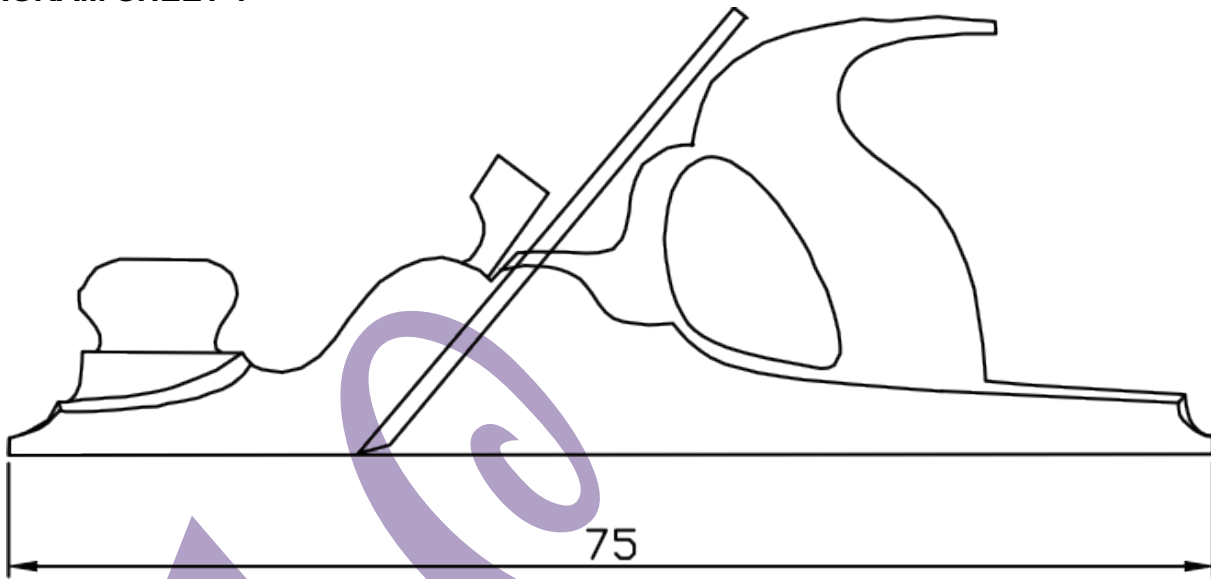
(6)

**NOTE:** A balanced layout and neatness of the complete ANSWER SHEET.

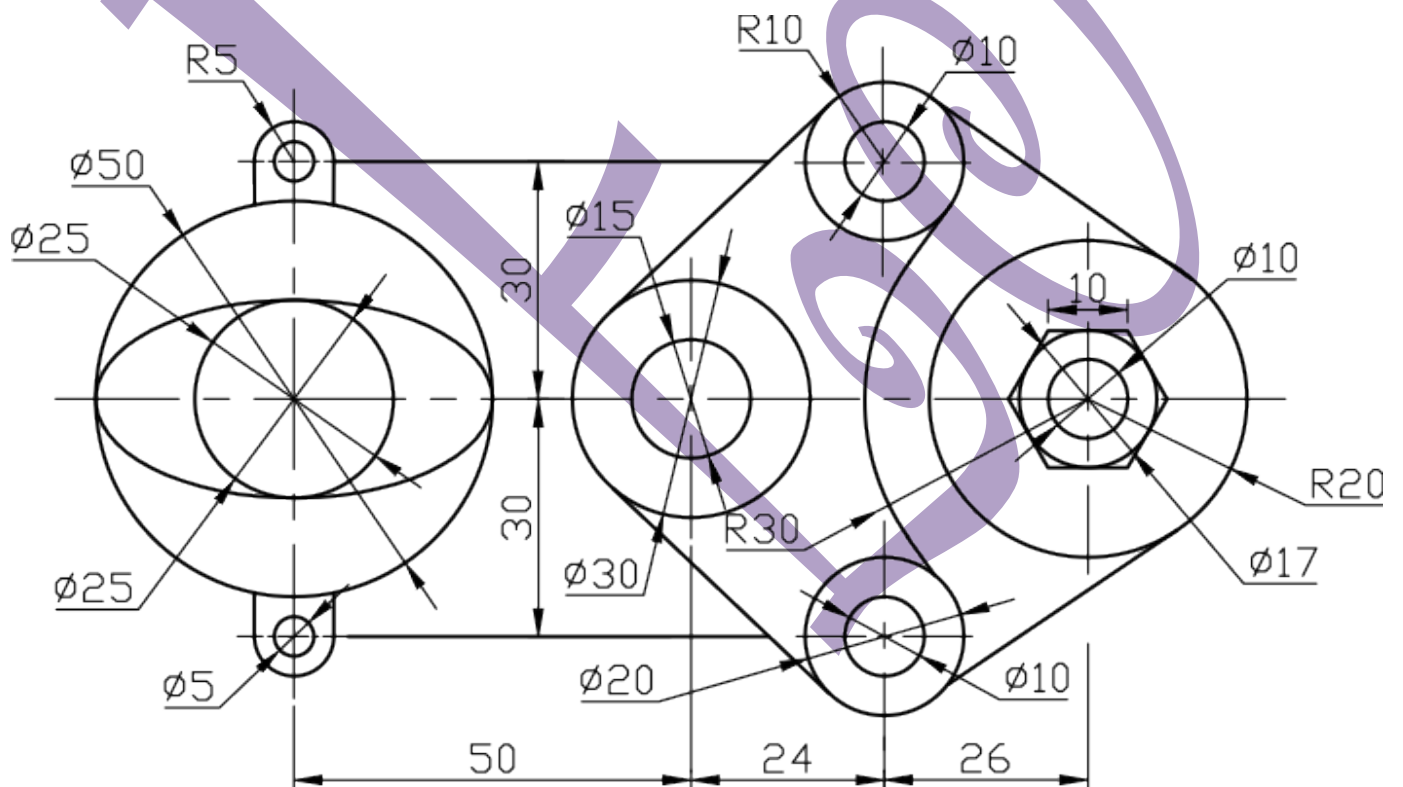
(10)

**[16]****TOTAL: 100**

# DIAGRAM SHEET 1



## FIGURE 1



SCALE 2:1 / SKAAL 2:1

**FIGURE 2**



## DIAGRAM SHEET 3

## DIAGRAM 5

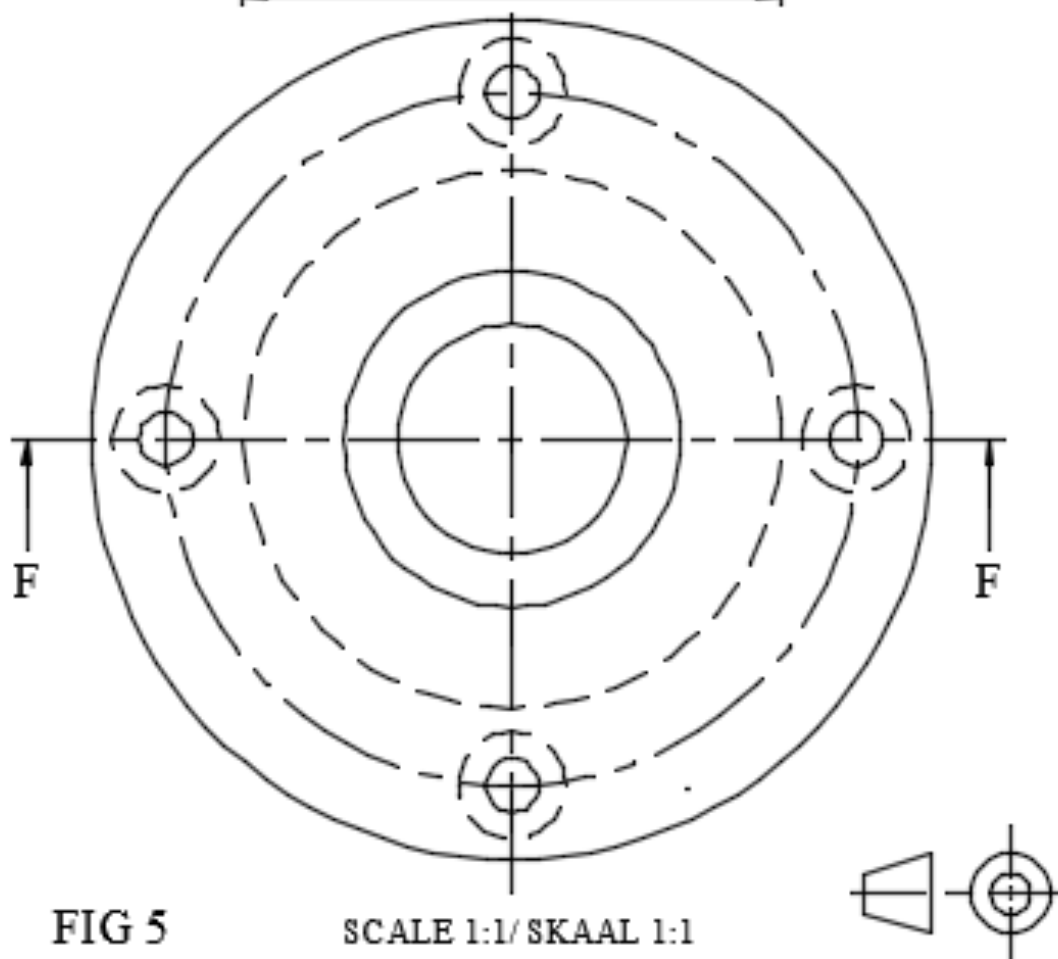
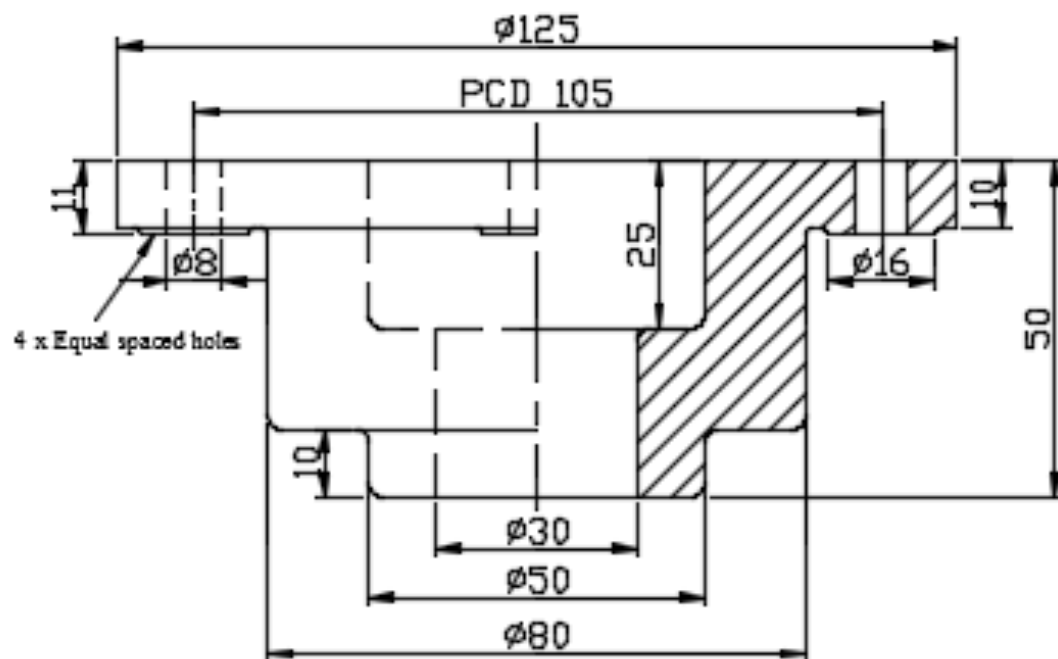


FIGURE 5



DIAGRAM SHEET 4

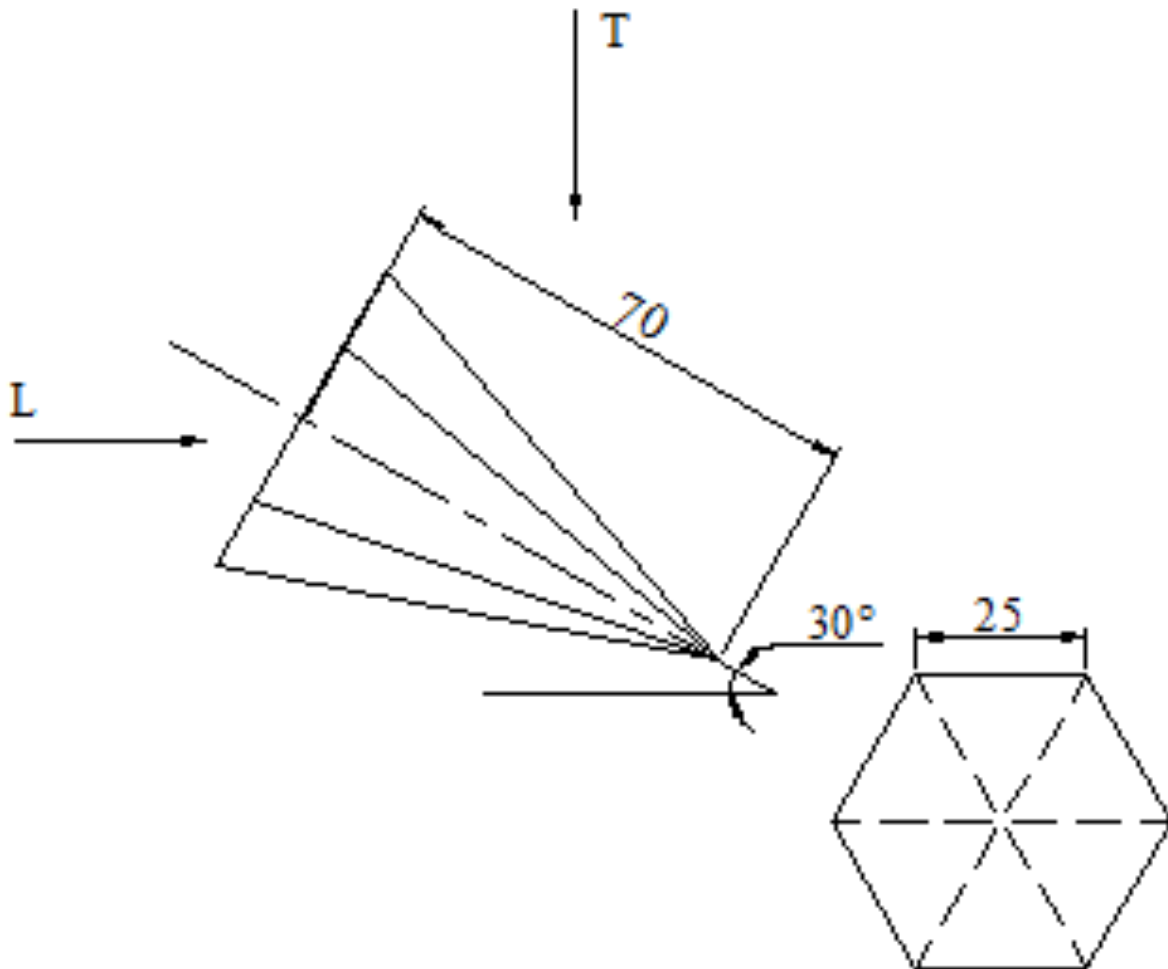


FIG 6  
SCALE 1:1/ SKAAL 1:1

FIGURE 6